

NOAA'S CORAL REEF PROGRAM

conserve, protect, restore



U.S. DEPARTMENT OF COMMERCE • NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



U.S. CORAL REEF ECOSYSTEMS



U.S. coral reefs... ...cover 7,577 square miles;

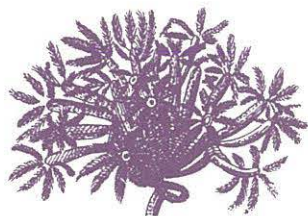


...comprise 10% of the world's reefs; and

...include the third largest barrier reef in the world, the Florida Keys, and the second largest reef protected area in the world, the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve (1200 miles long).

BENEFITS

Hidden
beneath
the
ocean



waters, coral reefs teem with an astounding array of life, and are nature's most diverse marine ecosystem. Fish, corals, lobsters, clams, seahorses, sponges, seals, and sea turtles are only a few of the creatures supported by the reef structure. We continue to discover the diversity of the coral reef ecosystem. More than just pretty pictures, coral reef ecosystems benefit millions of people. They...

...**Provide income and food.** Healthy coral reefs support commercial and subsistence fisheries as well as jobs and businesses through tourism and recreation.

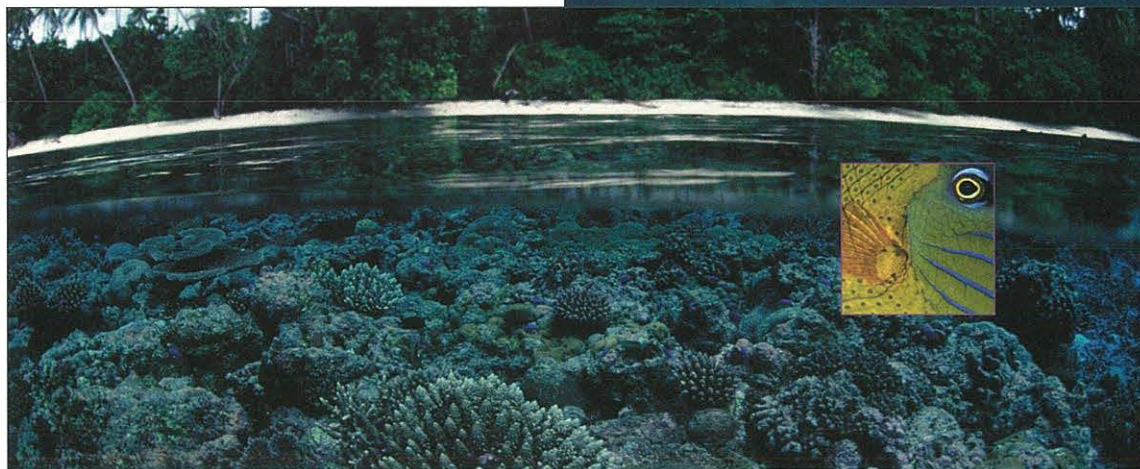
...**Save lives.** Coral reef organisms are important sources of new medicines being developed for treating cancer, arthritis, and infections. Coral

reef organisms use potent chemicals to fight off attackers, and scientists continue to research the medical potential of these chemicals.

...**Protect coastal communities.** The coral reef structure buffers shorelines from wave action, storms, and floods, helping to prevent erosion, property damage, and loss of life.

...**Sustain cultural traditions.** Coral reefs are an integral part of the cultural values and traditions of native people living near reefs.

HAWAII — Aerial photograph of a coral reef watershed, NOAA/NOS.



SOLOMON ISLANDS — ©2002 Norbert Wu / www.norbertwu.com

THREATS

Coral reef ecosystems have survived



millions of years of natural disturbances

such as tropical storms, floods, climate change, and disease. Today, these natural stresses are compounded by impacts from human activities, causing a rapid decline in coral reef ecosystem health.

Approximately 11% of the world's coral reefs have been destroyed, and an additional 16% have been severely damaged. Without major action to reduce and eliminate human impacts, experts estimate that 60% of the world's coral reefs could be lost by 2030 (*Status of Coral Reefs of the World 2000*). Significant threats to coral reef ecosystems include...

...**Pollution.** Coming from land and sea, sewage, fertilizers, chemicals, oil, and sediments harm coral reefs.

...**Over-fishing.** Intensive commercial and recreational fishing can devastate fish populations, often with ecosystem-wide effects.

...**Destructive fishing practices.** Fishing gear, poisons, and explosives are used to catch fish. These practices damage coral reef ecosystems, sometimes beyond repair.

...**Vessel groundings and anchor damage.** Coral reefs are fragile — direct impacts from ships, boats, and anchors destroy them.

...**Marine debris.** Fishing nets and other debris accumulate on the coral reefs, entangling and breaking the corals, and injuring sea life such as sea turtles and seals.

...**Global climate change.** Coral reefs are highly sensitive to temperature fluctuations. Extreme temperature fluctuations, enhanced by climate change, can result in coral reef stress, bleaching, and even death.

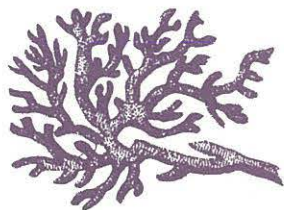
...**Disease.** Disease outbreaks contribute to mass mortalities of corals and coral reef organisms such as fish and sea urchins.

FLORIDA — White band disease on elkhorn coral. Andy Bruckner, NOAA/NMFS.



NOAA'S COMMITMENT TO CORAL REEF CONSERVATION

NOAA,
as
steward
of



OUR nation's marine resources and a co-chair of the U.S. Coral Reef Task Force (USCRTF), has both the responsibility and unique scientific and management capabilities needed to help reduce the threats facing our nation's coral reefs.

The NOAA Coral Reef Program works with scientific, private, government and non-government partners, from local to international scales to conserve coral reef ecosystems. From mapping and monitoring, to managing reef resources and removing harmful debris, the NOAA Coral Reef Program addresses the priorities laid out in the National Action Plan to Conserve Coral Reefs. The National Action Plan is the nation's

blueprint for coral reef conservation and was developed by USCRTF members and constituents.

Mapping

Coral reef maps provide basic information about coral reef ecosystems. Scientists and managers use these maps to design research and management plans, assess damaged coral, monitor reef health, and evaluate the results of their work. As part of the Coral Reef Program, NOAA with its many partners is applying a variety of technologies to map all U.S. shallow water coral reef ecosystems and some deep reef areas by 2007.



HAWAII — Black damselfish and cauliflower coral.
Dave Gulko, HCRI-RP.

U.S. VIRGIN ISLANDS — Boundary determination and classification of coral reef ecosystems (red: coral; pale yellow: sand; green: seagrass; gray: land). NOAA/NOS. <http://biogeo.nos.noaa.gov/>



U.S. VIRGIN ISLANDS — Deploying a coral reef monitoring station.
John Halas, NOAA/NOS.

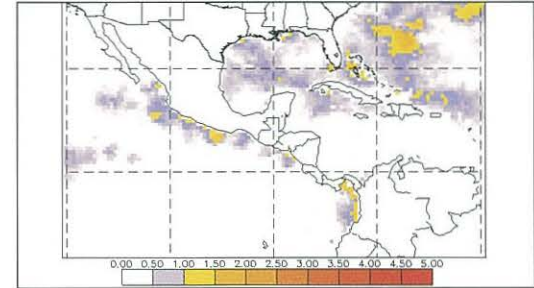


Monitoring and Research

Monitoring and research help managers diagnose reef problems, prioritize and implement solutions, evaluate the results of management decisions, and forecast future conditions. The NOAA Coral Reef Program is contributing to the national effort to build an integrated reef monitoring system. The system will profile and track the health of U.S. coral reefs and measure the effectiveness of management actions. NOAA also supports research about coral reef ecosystems and human impacts on those systems.



CARIBBEAN AND SOUTH PACIFIC — Satellite-derived product that monitors for potential coral reef bleaching.
http://orbit-net.nesdis.noaa.gov/orad/coral_bleaching_index.html



The monitoring and research element of the Coral Reef Program consists of:

- *grants and technical assistance to support state and territory monitoring programs;*
- *biennial reports on the condition of U.S. coral reef ecosystems;*
- *Coral Reef Watch — a global warning system for reef bleaching and health;*
- *assessments of reef habitat, fish populations, and protected species; and*
- *research programs at NOAA laboratories and grants that address coral reef ecology, disease and bleaching, and developing new technologies to conserve coral reefs.*



Management and Conservation

NOAA is responsible for conserving and managing many of the nation's coral reef resources. The NOAA Coral Reef Program works with states, territories, and other partners to respond to immediate threats and implement long-term strategies to manage and conserve coral reefs.

The management and conservation element of the Coral Reef Program:

- *ensures sustainable coral reef fisheries;*
- *implements measures to protect threatened coral reef species such as the hawksbill turtle and the Hawaiian monk seal;*
- *effectively manages National Marine Sanctuaries and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve;*
- *strengthens the use of marine protected areas in reef management;*
- *supports state, territory, university and private conservation efforts through grants;*
- *reduces pollution and removes marine debris;*
- *plans for and responds to oil and chemical spills;*
- *reduces vessel impacts by providing anchoring moorings and navigational aids; and*
- *restores damaged reef ecosystems.*

FLORIDA — Restoring coral reef impacted by a freighter grounding.
Marine Resources, Inc. <http://sanctuaries.nos.noaa.gov/special/wellwood->

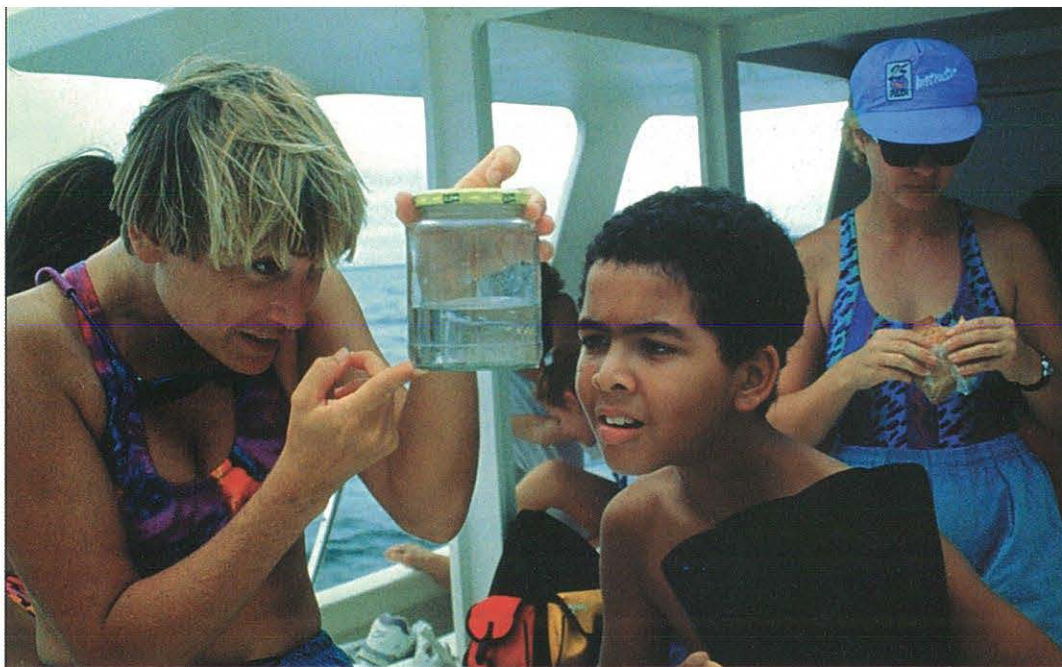


Outreach

A key element of coral reef protection is a strong outreach effort. Effective outreach requires reliable access to, and efficient sharing of, information. NOAA Coral Reef outreach informs and trains managers, researchers, teachers, and private citizens, enabling them to conserve coral reef ecosystems.

The NOAA Coral Reef Program reaches out to concerned users by:

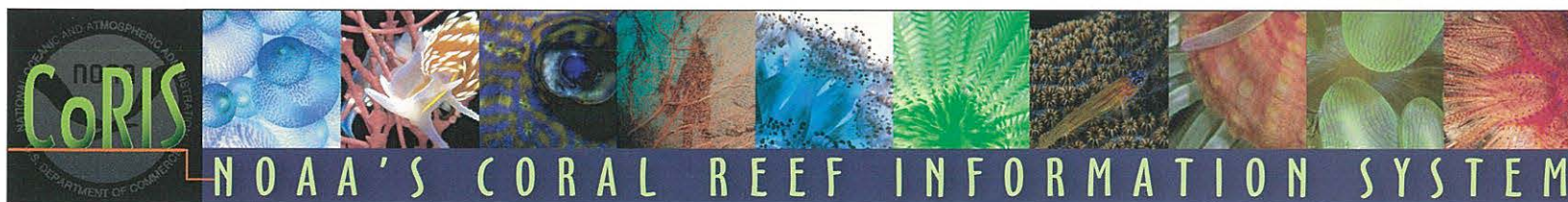
- *conducting workshops and training sessions to meet local needs of state and territorial resource managers and private citizens;*
- *providing easy, up-to-date access to coral reef information and data through CoRIS – a new web-based Coral Reef Information System;*
- *working with local governments to clarify the role of reefs in sustaining local economies; and*
- *offering opportunities for first-hand educational experiences to teachers and students.*



FLORIDA — Coral Reef Classroom, Florida Keys National Marine Sanctuary.



NOAA's Coral Reef Information System website — www.coris.noaa.gov



CORAL REEFS — A GLOBAL CRISIS

Coral reefs provide valuable benefits



to millions of people worldwide. Without major action to reduce and eliminate human impacts, experts estimate that 60% of the world's coral reefs could be lost by 2030 (*Status of Coral Reefs of the World 2000*).

Human impacts on coral reef ecosystems reach far beyond political boundaries. Protecting U.S. coral reefs requires regional collaboration.

NOAA works with international partners and participates in the International Coral Reef Initiative (ICRI) and the Global Coral Reef Monitoring Network (GCRMN) to strengthen conservation efforts and reduce threats to coral reef ecosystems.

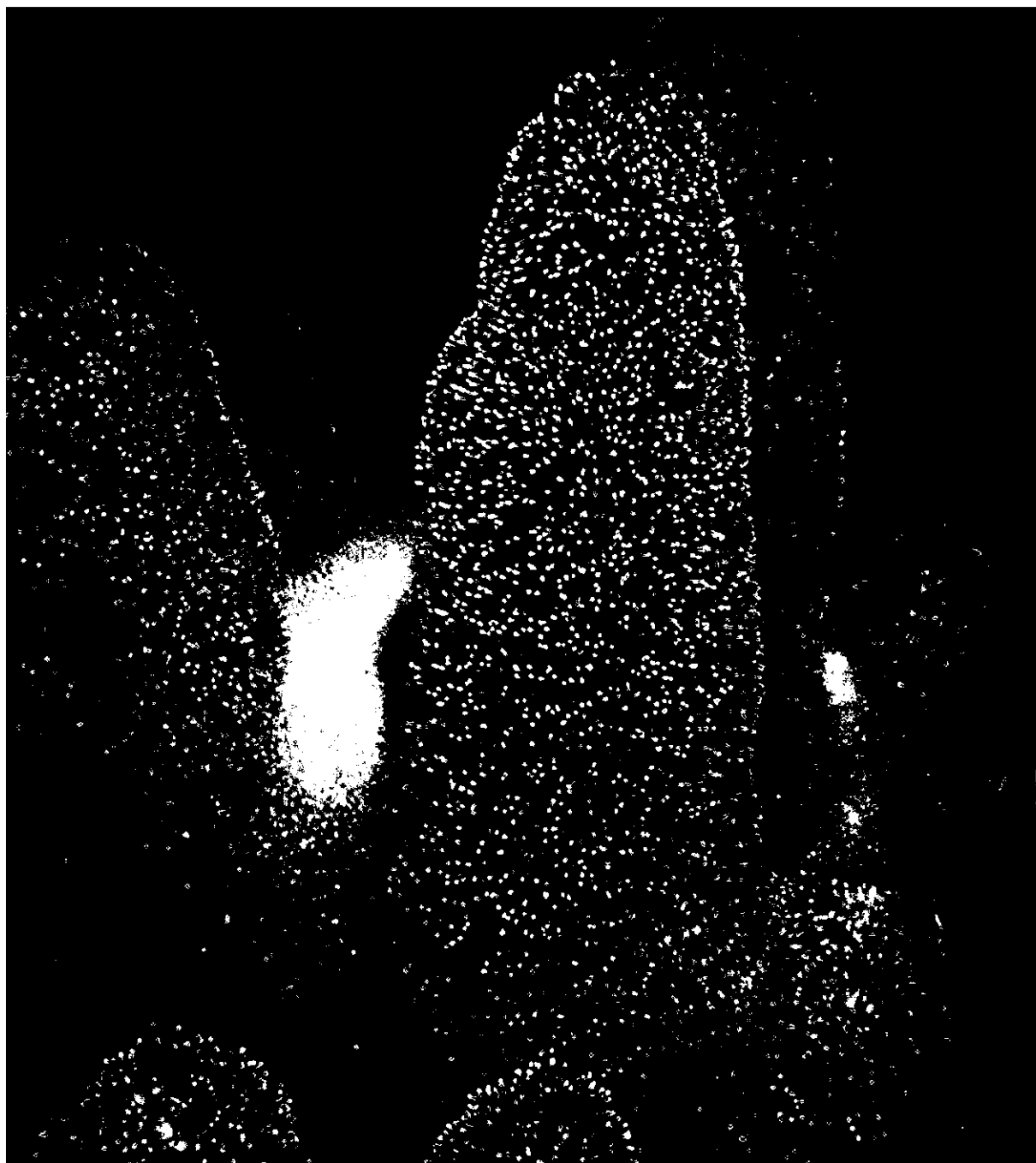


Cautionary signs show world-wide concern for the health of coral reef ecosystems...

JAMAICA — Andy Bruckner, NOAA/NMFS.

VIETNAM — Heidi Schuttenberg, NOAA/NOS.





For more information...

...about the NOAA Coral Reef Program, visit our website:

www.coralreef.noaa.gov

...about the U.S. Coral Reef Task Force and the National Action Plan:

www.coralreef.gov

FLORIDA — Pillar coral. Cdr. William Harrigan, NOAA Corps (ret.)

Inside front cover...

HAWAII — Divers with large table coral. Jim Maragos, HCRI-RP.



NOAA'S CORAL REEF PROGRAM

U.S. DEPARTMENT OF COMMERCE

Donald L. Evans

U.S. Secretary of Commerce

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Conrad C. Lautenbacher, Jr., Vice Admiral, U.S. Navy (Ret.)

Under Secretary of Commerce for Oceans and Atmosphere, and Administrator, National Oceanic and Atmospheric Administration

September 2002